retain the last solution, using a less quantity if necessary, so that it may become absorbed.

DISCUSSION.

Dr. Geo. L. Cole, Los Angeles—I feel much gratified by this paper. It is rather interesting at this time, when the profession is reaching out for new remedies, to have brought to our notice something which is easily applied, something which is not new, except the application, and something which has stood the test of time. I think that instead of devoting so much time to grasping new remedies, if we utilize this we will do better. For instance, so many new hypnotics have been placed before us; and I am sure that none of the hypnotics are equal to chloral hydrate. While there is no exception to be taken to anything that was said, there are one or two points that might be emphasized in regard to what the doctor said about the short and long application of cold and heat. In the short application of cold the reaction is quick, and is continued by the long application of the cold. What he said, furthermore, about the study of this subject, we should remember that here is something we are not as familiar with as we should be. He says the novice may think it is easy, but if he does not understand it he will not get the results.

If we do not understand the treatment we will not get the results we expect. The question of cold applications acting as a tonic cannot be better exemplified than in the Brandt treatment of typhoid fever. We have all seen, under this treatment, how the circulation is benefited, the temperature comes down, the days go by, and what was considered a critical case goes on to recovery. Many of our patients become disgusted with drugs; hence it is we have so much attention paid in these days to mental science, osteopathy, etc. The use of cold water, especially in the institutions where hydropathy is used, where the patient comes in contact with a room fitted up as in a sanatorium, where there are various methods of using it, as the bath, jet and spray, it has a psychic effect; and in many cases along the line of neurasthenia they are benefited, very much from the psychological effect, and it is proper for us to take account of this line of treatment and the effect. If I was to criticise any remark made, it was the suggestion that the authority let drop—I am not quite sure that I understood correctly, but I gained the impression—that if water was properly used we might do away with venesection. I can't believe this. The longer I practice medicine the more I am convinced that there are cases where venesection should be employed. If I have ever saved human life, I believe it was in two cases where I promptly drew 25 to 30 ounces of blood; and I believe in pneumonia, in strong plethoric persons, that in the beginning of the disease venesection will accomplish something that nothing else will. I believe also that there are cases of cardiac lesions in which if properly applied and promptly used at the proper time life may be saved, or the critical period tided over in these valvular lesions. I had one patient in whom I did this, and the patient had two years of good health, and I believe if the prompt venesection had not been used the patient would have died. In apoplectic attacks, or in some cases where the symptoms positively point to apoplexy, I do not think we can replace venesection by hydrotherapy.

Dr. H. N. Rucker of Merced—I would like to ask Dr. Hare one question for information. I would like to know if he has had any experience with it and would recommend a cold compress in surgical shock; for instance, would his idea be that the heart action would be increased by the cold? I ask this question because I have had some experience in applying very hot applications over the heart in extreme surgical shock, and where the pulse was not perceptible. I never used the cold, because I feared the effects would be disastrous, but I have seen good effects from the heat.

Dr. Hare—I am glad the gentleman asked the question referring to cold in shock. It is a question closely allied to the last reader as in pneumonia. The only effect we get from the cold is through the reaction or the reflex manifestations. When we apply cold to an area, we get reflex action from the cold immediately. That reflex action comes from the impression of the cold on the nerve centers in the skin. If we leave it on for a while, we get numbing of the skin. If Dr. Sanderson, who read the paper on pneumonia, continues the cold long enough to get numbing of the body, he will get just what we don't want in the surgical shock, a condition of partial numbing of sensibility. He took a cold compress for a short time and got bad results. We must get a reaction of sensibility. When we don't get the reaction, we aggravate it. If it is cold enough and for a short period, it will be all right. The doctor's suggestion to the use of heat is a good one, and we get good results from the short applications of heat, and then follow it by the cold. I wish this subject might be thought about and discussed oftener in the medical associations. The use of hydrotherapy is relegated by the ignorant, and I don't hesitate for a moment to be a defender of its scientific value. It has a basis that is well founded. I wish to call attention to another point in the use of hydrotherapy in typhoid fever. We are apt to make a mistake when the skin is cold; the blood supply to the skin is limited, and the internal organs are engorged. A heat application for ten seconds will bring the blood to the surface, and then we apply the cold and we get a better reaction. The use of friction has been suggested, and it is a most excellent feature, and is essential. We can't get the par excellence results without it. The friction should be extremely superficial and rapid. The heart brings the blood to the surface and then we can use the cold applications. I called attention to another point, that is, cold not only reduces the fever, but it does more. It is the significant point of the treatment. The cold stimulates the vital processes of the body, and increases the alexins in the body. The heat increases the defenses and is an effort on the part of nature to do away with the toxins. I don't think we get the greatest results from the bath, as it does not control the nerve centers. I want to thank the Society for the kindness with which they received this report. Hydrotherapy should be studied from a more scientific standpoint in order to get the benefits. I want to say that I intended to suggest the idea that by the scientific use of heat and cold, blood letting may be avoided. Any part of the body may be depleted of blood by taking it to the skin, and promiscuous bloodletting may be obviated by the agency of heat and cold.

SPINAL ANESTHESIA WITH TROPA-COCAINE IN GENITO-URINARY SURGERY.*

By M. KROTOSZYNER, M. D., San Francisco.

AS early as 1885 in the first publication upon spinal anesthesia that appeared in medical literature, Corning (1) says: "Whether the method will ever find an application as a substi-

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tute for etherization in genito-urinary or other branches of surgery, further experience alone can show." Since August Bier's first experiment with spinal anesthesia he emphasized the fact that operations in the pelvis, perineum, and the anus are fitted for this mode of anesthetizing, as complete analgesia may be obtained for these regions through small and comparatively undangerous doses of the anesthetizing drugs.

My own experience with spinal anesthesia dates back about two years. At that time I witnessed several operations under spinal anesthesia by Dr. Tait, who, with Dr. Caglieri, wrote a remarkable treatise (2) upon the subject. I soon afterwards proceeded to experiment with spinal cocainization in some of my old prostatic patients; where a general anesthetic appeared to be dangerous on account of heart and kidney complications. My experience with the method was not very satisfactory on account of the very distressing and often dangerous symptoms which most of my patients exhibited during and after spinal cocainization, and at the last meeting of the California State Medical Society, held in Sacramento, I said, discussing Dr. A. W. Morton's (3) paper on spinal cocainization: "I have used this method * * * and have noticed such violent and distressing symptoms * * * that I would not wish to repeat this method of anesthetizing unless I am compelled to."

Such and similar objections to spinal cocainization are voiced by various authors. Mikulicz (4) for instance, reports among thirty-five cases of spinal cocainization, ten times distressing symptoms during and eight times after the operation. The horrible picture of intoxication so often observed after spinal cocainization is best described by Kammerer:

> Suddenly the patient becomes pale, the pulse becomes rapid and small; the patient yawns and makes deep and difficult inspirations until dyspnea sets in, pulse thready, not palpable; profuse perspiration, nausea and vomiting, spastic contractures of lower extremities; pulse-rate, that had increased to 140-160, sinks to 55-70; collapse at different periods. These symptoms may last a very few or even fifteen or twenty minutes.

I had, therefore, almost decided to abandon spinal anesthesia entirely when my attention was shortly afterwards called to an article of Willy Meyer of New York (6) who had operated on three cases under spinal anesthesia with tropa-cocaine, and at the same time Schwartz's (7) publication upon the use of tropa-cocaine in place of cocaine fell into my hands. Schwartz arrived, through carefully conducted experiments, at the result that 0.05 tropa-cocaine injected into the subarachnoid space produced as perfect an analgesia as the ordinary cocaine, while none of the disagreeable and dangerous symptoms experienced with the ordinary cocaine were noticeable.

Tait (e.c.), who had experimented with several other drugs in order to avoid the toxic influence of cocaine, began at the same time to use the tropa-cocaine and called my attention to its advantages over the cocaine, especially in its not being accompanied and followed by the above-mentioned distressing and dangerous symptoms. I had at that time under my care an extremely sensitive patient of 75 years, with a supra-pubic fistula of four years' standing as a result of supra-pubic lithotomy, from which the urine continually flowed down alongside the supra-pubic tube over the patient's thighs, causing a very annoying eczema. Rectal examination revealed a very large prostate, the middle lobe of which obstructed the entrance of the bladder. On account of the patient's advanced age and his faulty kidneys, an operation under local anesthesia in the hypersensitive patient seemed to be impracticable. I therefore decided to perform a Bottini operation under spinal anesthesia with tropa-cocaine. I injected 0.05 or 5-6 of a grain of tropa-cocaine and started five minutes after injecting to operate. In rapid succession I introduced steel sounds of increasing size in order to dilate the urethra, that had not been used for several years as a urinary channel; then I introduced the Bottini instrument and made three very extensive incisions to the three lobes respectively, leaving a catheter in the bladder afterwards. During the operation the patient was occupied in conversation with a friend, his pulse did not increase in rate nor deteriorate in volume, no nausea, no vomiting, respiration normal, not the least sign of pain during cauterization of the gland. The patient did not show any disagreeable after-effects from the anesthesia (no rise in temperature, no headache). I repeated in this patient twice the same method of anesthesia, the first time about six weeks after the first Bottini operation, in order to close the supra-pubic fistula, the second time, two months after the second operation, in order to perform a second Bottini operation for the re-establishment of the spontaneous micturition through the natural passages after closure of the supra-pubic fistula.

Such a result could never have been obtained without the aid of this method of anesthetizing, because I don't think the patient could have survived three general narcoses, neither would a careful surgeon have attempted these operative procedures on account of the dangers connected with general anesthesia in old and decrepit individuals.

Since this experience I have done almost all my genito-urinary surgery under spinal anesthesia with tropa-cocaine and can recommend it highly. I have operated so far in over 120 cases. Most of my work was done on the bladder, scrotum, penis, etc.

Tropa-cocaine is chemically benzol-pseudotro-

pin hydrochlorate, and has the formula $C_8 H_{14} No (C_6 H_5\text{-}CO) HCL$. This alkoloid occurs with cocaine and other bases in the small Java Coca leaves, prepared hynthetically by Liebermann. It forms white needles, melting at 271° C., or 519.8° F., and is readily soluable in H_2O In solutions of 2 per cent to 5 per cent it produces a rapid anesthesia, is less toxic and more reliable than cocaine (Ferdinando and Chadbourne).

I have always used for my work the glass tubes as prepared by Dr. Tait. Each tube contains 1 cc. of a 4 per cent solution of tropa-cocaine, both ends of the tube are sealed, then placed in a bath of water and glycerine for one and one-quarter hours, at a temperature of 120° F. and cooled off. The glass is filed off at a convenient place so that it may be broken when the contents are needed for injection. I shall not describe here the instrumentarium and technique of lumbar puncture, as those points are repeatedly dwelt upon by various authors in former publications. I generally obtained complete analgesia for my field of operation by the above-mentioned dose of tropa-cocaine, and generally started the operation ten minutes after the injection. In some cases where I injected less than 1 cc. of the 4 per cent solution, or even only half the dose, I had to wait fifteen, twenty or twenty-five minutes until analgesia was obtained. In two cases of my whole material no analgesia occurred, and the operation had to be done under general anesthesia. In both instances the escaping of several drops of cerebro-spinal fluid made it sure that the point of the needle had punctured the subarachnoid space and in the case of a very nervous woman with visical spasms certain symptoms (slight icterus with rise of temperature until eight days after spinal puncture) were observed that I was inclined to ascribe to the lumbar puncture.

In nervous and excitable patients, occasionally, the operation was somewhat impeded by great restlessness of the patient, which sometimes could be arrested by placing a mask over the patient's face, simulating chloroform anesthesia. Whenever those patients, after the operation, were asked if they had felt any pain they invariably denied it. We never used of late a stimulant hyperdermatically or *per os* before or during the operation, as generally no shock or other distressing symptom caused by the puncture or the injected drug were noticeable. One assistant is placed at the head of the patient to carefully watch respiration, pulse, pupils, etc. A nurse is detailed in some instances to engage a nervous patient in pleasant conversation and to distract notes upon one interesting observation:

An important point that so far has not been brought out is that this method of anesthesia permits us to obtain the patient's consent for removal of an organ during the operation, where in general anesthesia a second operation would be necessary because the patient's consent for a more radical procedure could not be obtained. To illustrate this point I may be permitted to give brief notes upon one interesting observation.

A man of 33 consulted me for a subacute anterior urethritis (with gonococci) and epididimitis on the right side. Upon taking the history of the case I ascertained that the right testicle had been swollen for several months previous to the present attack of gonorrhea, which at that time lasted for about three weeks. As no benefit could be effected by ambulatory treatment, the patient was persuaded to enter the hospital, where, in spite of rest and careful treatment, the swelling of the right epididymis increased; a few days later an effusion into the tunica was noticeable, which rapidly increased; puncture was made for diagnostic purposes and 1 cc. of a sero-purulent fluid obtained, that contained pus cells, tuberclebacilli, streptococci, but no gonococci. The operation under spinal anesthesia revealed an epididymis and testicle that were entirely riddled by tubercular abscesses, miliary tubercles covered the cord and surrounding tissues up to 4 or 5 cm. from the epididymis. I informed the patient of the condition of the organs mentioned and obtained permission for castration, which I did, following up the vas deferens to the internal inguinal ring.

I am certain from my experience that spinal anesthesia with tropa-cocaine will prove to be a useful and reliable method in our field of surgery, though I will admit that disagreeable symptoms will occasionally be noticeable from its use. Repeatedly in my cases a slight dyspnea was observed; the pulse-rate increased to 100, in two cases to 120; involuntary defecation occurred in three cases, and in the case of the above-mentioned woman, where no analgesia was effected, profuse vomiting followed the injection of the drug. But all those disagreeable sequels were the exception; as a rule the analgesia was complete and the operation could be finished without any interruption caused by the intra-spinal injection. The same favorable results were obtained as regards after-effects. I have never observed the excruciating headache so often noticeable after spinal cocainization, and I am inclined to believe with Bier (8) that neither the difference in pressure of the cerebro-spinal fluid nor circulatory disturbances, but the toxic effect of the cocaine is the real cause of this distressing symptom. In regard to increase of temperature as a sequel of spinal anesthesia with tropa-cocaine, I cannot express a decided opinion. In the few of my cases where it occurred I was not certain whether the condition of the wound was not the cause of this symptom.

The majority of my operations lasted less than an hour. Only in one case (an external urethrotomy with total obliteration of the urethral canal) we worked one hour and forty minutes with complete analgesia after injection of 0.05 tropa-cocaine.

The only real danger, to my mind, connected

with this method of anesthesia lies in the possibility of sepsis to the spinal canal. Therefore I would not attempt spinal anesthesia in a private dwelling. In the hospital I have the patients in whom spinal anesthesia is to be made prepared as for a laparotomy. The day before the operation the patient gets a full bath, his back is shaved and a sublimate-pad applied upon it. On the operating table the field of the puncture is sterilized as carefully as the site of an abdominal section.

I hope you will test this method unbiasedly in your genito-urinary surgical work, so that well established indications for this method of anesthetizing may be drawn from for future experience. My work teaches me that the method seems to be impracticable in very nervous and excitable patients. I can highly recommend it, though, for old and decrepit individuals where a weak heart or unreliable kidneys would contra-indicate a general anesthesia. I have not had a mishap in my spinal anesthesia with tropa-cocaine so far, and I consider this method not to be more dangerous than any other form of anesthetizing, while its advantages over general anesthesia for the patient are unquestionable.

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ON PTOMAINE POISONING.*

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PTOMAINE poisoning, with exclusive or prevailing gastro-intestinal symptoms of lesser or greater severity, is not of rare occurrence in medical practice.

The symptoms are those of a more or less pronounced gastro-intestinal catarrh, with general feeling of malaise, epigastric pressure, regurgitation and vomiting of sour or bitter particles, and also diarrhea. In the medium and more severe cases the above symptoms are accompanied by secretory disturbances, characterized by dryness of the skin and mucous membranes.

In addition, we find nervous disturbances, which demonstrate themselves in different gradations of bulbar symptoms. These last-named cases are fortunately rare, and it is my purpose to present the differential diagnosis of these, based upon the material about to be given.

In a boarding-house of this city, seven persons became sick within nine days, three of whom died. The eating of tainted boiled beef on the 27th of November was given as the cause of the sickness. From two of the fatal cases, which were not under my care, I obtained the following histories:

Case 1. **The patient became sick two days after eating the meat, with symptoms of general muscular weakness, dryness in the throat and difficulty in swallowing. Died after two days.**

Case 2. **The patient became sick four days after eating the meat, with symptoms of general prostration, dryness in the throat, difficulty in swallowing, diplopia, ptosis. Died in six days.**

I had under my observation five cases, one of the patients dying, the other four recovering.

The history of these are briefly as follows: On the 6th of December Dr. H. and his wife visited me in my office.

Case 3. Dr. H. had complained for six days past of tiredness, dizziness, lack of appetite, pronounced weakness in the legs, causing inability to walk two blocks; of heaviness of the arms, of dryness of the mouth.

Case 4. Mrs. H. complained of practically the same symptoms, with the exception that the dryness in her throat was more pronounced and she had difficulty in swallowing; slight ptosis, and constipation.

Case 5. On the 8th I was called to see Mrs. C. She had felt ill for several days, remaining in bed, and at the time of my visit she still complained of general muscular weakness and lack of desire to get up; lack of appetite, constipation, scratching and dryness in the throat.

Case 6. Mr. T. called upon me on the 9th of December. He complained of general tiredness, great muscular weakness, making it difficult for him to walk; constipation, and had no desire to work. He had also, for several days previously, felt dryness in his throat; nausea and dizziness.

Case 7. On the night of the 10th of December I was called to the Homeopathic Sanitarium to examine Mr. G., who had become sick on the 3rd of December. He had been in the Sanitarium for five days with a diagnosis *in suspenso*. The history which I could obtain was as follows:

The patient became sick with symptoms of pronounced prostration, lack of appetite, dryness and scratching in the throat. He could open his eyes only with difficulty. He was constipated; no urinary disturbances, no headache. On the following day difficulty in swallowing was present, which increased to actual inability to swallow, accompanied by increasing dryness of the mouth and pharynx and great thirst. The voice became hoarse, breathing and pulse quickened. No food had been taken for five days, owing to difficulty in swallowing and coughing caused by particles of food lodging in the larynx.

Examination gave the following status: Well-built man of average height and musculature, with slight panniculus adiposus. No edema. The patient rested in a passive, half-sitting posi-

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